

IN THE CLAIMS

1. **(currently amended)** A data generating device installed on an upstream side of a switching device for performing switching based on data of a first layer, comprising:

a reading unit to read out forward management information relating to a forwarding process of forward data ~~to be forwarded to one or more clients~~ from data of a second layer higher than the first layer;

a storage unit to store the forward management information read by said reading unit;

a data generating unit to identify one or more clients, each of which corresponds to a forward destination of the forward data, based on the forward management information stored in said storage unit, and ~~generating the~~ to generate a same number of pieces of transmission data as the a number of identified clients in order to transmit each piece of transmission data to each client corresponding to the forward destination, wherein each of the pieces of transmission data includes equivalent contents to the forward data and has an address of a corresponding one of the identified clients as a destination address of the first layer of the transmission data; and

a forwarding unit to forward each piece of transmission data generated by said data generating unit to the switching device.

2. (Original) A data generating device according to claim 1, wherein said data generating unit determines one or more clients, each of which corresponds to the forward destination, based on the data of the second layer in the forward data.

3. (canceled)

4. **(currently amended)** A data generating device comprising:

a reading unit to read out information relating to a forwarding process of multicast data including a multicast address as a destination address of layer 2 defined on an OSI layer model from data of a layer higher than a the layer 2 defined on OSI layer model;

a storage unit to store forward management information based on the information read by said reading unit; and

a data generating unit to identify, based on the forward management information stored in the storage unit, one or more clients, each of which corresponds to a forward destination of the multicast data, and to generate the a same number of copies of the received multicast data as the a number of identified clients to be forwarding destinations, and to transform each copy of the multicast data into unicast data by changing the destination address of the layer 2 of each copy of the multicast data from the multicast address into the layer 2 address of a corresponding one of the identified clients as a destination address of the layer 2 of the data, wherein each of the pieces of unicast data is transmitted to each of the identified clients.

5. (Original) A data generating device according to claim 4, wherein said data generating unit determines one or more clients, each of which corresponds to the forward destination, based on the data of the layer higher than the layer 2 in the multicast data.

6. (Original) A data generating device according to claim 4, wherein said data generating unit generates the unicast data having a MAC address of the client which is identified, as a MAC destination address.

7. (Original) A data generating device according to claim 4, further comprising sending unit to send each of pieces of the unicast data generated by said data generating unit

and the multicast data toward a downstream side.

8. (Original) A data generating device according to claim 4, further comprising managing unit to update the forward management information stored in said storage unit on the basis of the information read by said reading unit.

9. (Original) A data generating device according to claim 8, wherein in case the information read by said reading unit is participation information indicating a participation in a multicast group, said managing unit reflects contents of the participation information to the forward management information stored in said storage unit.

10. (Original) A data generating device according to claim 9, wherein in case the information read by the reading unit is leaving information that indicates leaving from the multicast group, the managing unit deletes information relating to the client as a sender of the leaving information from the forward management information.

11. (Original) A data generating device according to claim 9, further comprising time measuring unit to measure a fixed period of time,

wherein in case the time measuring unit judges that a response to a response request is not received for the fixed period of time or longer from the client, the managing unit deletes information relating to this client from the forward management information.

12. (Original) A data generating device according to claim 4, wherein said reading unit reads the information from a message of Internet group management protocol version 3.

13. (Original) A data generating device according to claim 4, wherein said reading unit reads the information from a message of multicast listener discovery version 2.
14. (Original) A data generating device according to claim 4, wherein said managing unit, when a message of internet group management protocol version 1 or version 2 is received, changes the forward management information on the basis of specifications of the internet group management protocol version 1 or version 2.
15. (Original) A data generating device according to claim 4, wherein said storage unit stores the forward management information including correspondence between an address of the client to which multicast data should be forwarded and a destination address of the multicast data.
16. (Original) A data generating device according to claim 15, wherein said storage unit stores the forward management information further including a source address of the multicast data.
17. (Original) A data generating device according to claim 10, wherein said storage unit stores the forward management information including correspondence between an address of the client to which multicast data should be forwarded and a destination address of the multicast data, and the data generating device further comprises client management information storage unit to store client management information based on the forward management information, wherein the client management information include a client identifier indicating the client to which the multicast data should be forwarded, a destination identifier indicating a transmission destination of the multicast data, a time when relationship

between the client and the transmission destination of the multicast data have been stored in the forward management information, and a time when the relationship have been deleted from the forward management information.

18. (Original) A data generating device according to claim 10, wherein said storage unit stores the forward management information including correspondence between an address of the client to which the multicast data should be forwarded, a destination address of the multicast data and a source address of the multicast data, and the data generating device further comprises client management information storage unit to store client management information based on the forward management information, wherein the client management information include a client identifier indicating the client to which the multicast data should be forwarded, a destination identifier indicating a transmission destination of the multicast data, a source identifier indicating a transmission source of the multicast data, a time when relationship between the client and the transmission destination of the multicast data have been stored in the forward management information, and a time when the relationship have been deleted from the forward management information.

19. (currently amended) A data generating device comprising:

a storage unit to store data relating to one or more clients desiring to receive multicast data to be forwarded to one or more clients based on a protocol of a first layer, wherein the multicast data includes a multicast address as a destination address of a second layer lower than the first layer; and

a data generating unit to generate, when accepts the multicast data, unicast data per client to be forwarded thereto based on a protocol of a the second layer lower than the first layer, from the multicast data by changing the destination address of the second layer from

the multicast address to an address of the client desiring to receive the multicast data, on the
basis of the data relating to the one or more clients that have been stored in said storage unit,
and to give the unicast data per client to a sending unit to send the unicast data toward one or
more second layer switches accommodating the one or more clients.

20. (Withdrawn) A client management device comprising:

reading unit to read information relating to a multicast data forwarding process;

storage unit to store forward management information based on the information read
by said reading unit, wherein the forward management information includes correspondence
between an address of a client to which multicast data should be forwarded and a destination
address of the multicast data;

data generating unit to identify, based on the forward management information stored
in said storage unit, one or more clients, each of which corresponds to a forward destination
of the multicast data, and generating the same number of pieces of unicast data as the number
of identified clients, from the multicast data;

managing unit to reflect, in case the information read by said reading unit is
participation information indicating a participation in a multicast group, contents of the
participation information to the forward management information stored in said storage unit,
and for deleting, in case the information read by said reading unit is leaving information that
indicates leaving from the multicast group, information relating to the client as a sender of the
leaving information from the forward management information; and

client management information storage unit to storing client management information
based on the forward management information, wherein the client management information
include a client identifier indicating the client to which the multicast data should be
forwarded, a destination identifier indicating a transmission destination of the multicast data,

a time when relationship between the client and the transmission destination of the multicast data have been stored in the forward management information, and a time when the relationship have been deleted from the forward management information.

21. (Withdrawn) A client management device comprising:

reading unit to read information relating to a multicast forwarding process;

storage unit to store forward management information based on the information read by said reading unit, wherein the forward management information include an address of a client to which multicast data should be forwarded, a destination address of the multicast data and a source address of the multicast data;

data generating unit to identify, based on the forward management information stored in said storage unit, one or more clients, each of which corresponds to a forward destination of the multicast data, and generating the same number of pieces of unicast data as the number of identified clients from the multicast data;

managing unit to reflect, in case the information read by the reading unit is participation information indicating a participation in a multicast group, contents of the participation information to the forward management information stored on the storage unit, and for deleting, in case the information read by the reading unit is leaving information that indicates leaving from the multicast group, information relating to the client as a sender of the leaving information from the forward management information; and

client management information storage unit to store client management information based on the forward management information, wherein the client management information include a client identifier indicating the client to which the multicast data should be forwarded, a destination identifier indicating a transmission destination of the multicast data, a source identifier indicating a transmission source of the multicast data, a time when

relationship between the client and the transmission destination of the multicast data have been stored in the forward management information, and a time when the relationship have been deleted from the forward management information.

22. **(currently amended)** A data generating method executed by an information processing device installed on an upstream side of a switching device for performing switching based on data of a first layer, comprising:

reading forward management information on a forwarding process of forward data to be forwarded to one or more clients from data of a second layer higher than the first layer;

identifying one or more clients, each of which corresponds to a forward destination of the forward data based on the forward management information;

generating ~~the a~~ same number of pieces of transmission data as ~~the a~~ number of identified clients ~~in order to transmit each piece of transmission data to each client corresponding to the forward destination~~, wherein each of the pieces of transmission data includes equivalent contents to the forward data and has an address of a corresponding one of the identified clients as a destination address of the first layer of the transmission data; and

forwarding each of the pieces of transmission data to the switching device.

23. **(currently amended)** A data generating method comprising:

reading information relating to a forwarding process of multicast data including a multicast address as a destination address of layer 2 defined on an OSI layer model from data of a layer higher than ~~a the layer 2 defined in OSI layer model~~;

storing forward management information based on the readout information;

identifying, based on the stored forward management information, one or more clients, each of which corresponds to a forward destination of the multicast data; and

generating, from the multicast data, the same number of copies of the received multicast data as the a number of identified clients to be forwarding destinations, and to transform each copy of the multicast data into unicast data by changing the destination address of the layer 2 of each copy of the multicast data from the multicast address into the layer 2 address of a corresponding one of the identified clients as a destination address of the layer 2 of the data, wherein each of the pieces of unicast data is transmitted to each of the identified clients.

24. (Withdrawn) A client management method comprising:

reading information relating to a forwarding process of multicast data;

storing forward management information based on the readout information, wherein the forward management information includes correspondence between an address of a client to which the multicast data should be forwarded and a destination address of the multicast data;

identifying, based on the forward management information, one or more clients, each of which corresponds to a forward destination of the multicast data;

generating, from the multicast data, the same number of pieces of unicast data as the number of identified clients;

reflecting, in case the readout information is participation information indicating a participation in a multicast group, contents of the participation information to the stored forward management information;

deleting, in case the readout information is leaving information that indicates leaving from the multicast group, information relating to the client as a sender of the leaving information from the forward management information; and

storing client management information based on the forward management information, wherein the client management information include correspondence between a client identifier indicating the client to which the multicast data should be forwarded, a destination identifier indicating a transmission destination of the multicast data, a time when relationship between the client and the transmission destination of the multicast data have been stored in the forward management information, and a time when the relationship have been deleted from the forward management information.

25. (Withdrawn) A client management method comprising:

reading information relating to a forwarding process of multicast data;

storing forward management information based on the readout information, wherein the forward management information include correspondence between an address of a client to which the multicast data should be forwarded, a destination address of the multicast data and a source address of the multicast data;

identifying, based on the forward management information, one or more clients, each of which corresponds to a forward destination of the multicast data;

generating, from the multicast data, the same number of pieces of unicast data as the number of identified clients;

reflecting, in case the readout information is participation information indicating a participation in a multicast group, contents of the participation information to the forward management information;

deleting, in case the readout information is leaving information that indicates leaving from the multicast group, information relating to the client as a sender of the leaving information from the forward management information; and

storing client management information based on the forward management information, wherein the client management information include a client identifier indicating the client to which the multicast data should be forwarded, a destination identifier indicating a transmission destination of the multicast data, a source identifier indicating a transmission source of the multicast data, a time when relationship between the client and the transmission destination of the multicast data have been stored in the forward management information, and a time when the relationship have been deleted from the forward management information.